

WHAT IS CLAIMED IS:

1 1. A catalyzer, comprising:
2 a plurality of plane sheets arranged superposed and spaced apart
3 from each other in a stack, each two successive plane sheets defining a channel
4 that extends parallel to a flow direction, said channel being delimited by the plane
5 sheets; and
6 a catalytic coating disposed on a predetermined section of each
7 plane sheet and defining a coated section, the coated section positioned opposite to
8 an uncoated section of the plane sheet,
9 wherein at least a portion of a heat radiation emitted from the catalytic
10 coating is absorbed by the uncoated section of the plane sheet.

1 2. The catalyzer as claimed in claim 1, further comprising:
2 a corrugated sheet having a plurality of ridges and grooves disposed
3 within the channel, the ridges connected to the plane sheets of the channel and the
4 grooves substantially parallel to the flow direction.

1 3. The catalyzer as claimed in claim 2, wherein the corrugated sheet
2 is uncoated with a catalytic coating.

1 4. The catalyzer as claimed in claim 2, further comprising a catalytic
2 coating disposed on at least a portion of the corrugated sheet, the portion defining
3 a coated section of the corrugated sheet.

1 5. The catalyzer as claimed in claim 1, wherein the uncoated section of
2 the plane sheet is provided with a material for absorbing at least a portion of the
3 heat radiated from the catalytic coating or for promoting a recombination reaction
4 of at least one radical.

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1 6. The catalyzer as claimed in claim 2, wherein the uncoated section
2 of the corrugated sheet is provided with a material for absorbing at least a portion
3 of the heat radiated from the catalytic coating or for promoting a recombination
4 reaction of at least one radical.

1 7. The catalyzer as claimed in claim 2, wherein the corrugated sheet
2 has a thickness less than a thickness of the plane sheet.

1 8. The catalyzer as claimed in claim 2, wherein a thickness of the
2 plane sheet and a thickness of the corrugated sheet is approximately equal.

1 9. The catalyzer as claimed in claim 2, wherein the corrugated sheet
2 has a thickness of less than 0.1 mm.

1 10. The catalyzer as claimed in claim 9, wherein the thickness is about
2 0.05 mm.

1 11. The catalyzer as claimed in claim 1, wherein each plane sheet is
2 uncoated at an inlet and at an outlet of the catalyzer.

1 12. The catalyzer as claimed in claim 11, wherein the uncoated surface
2 of the plane sheet has a length in the flow direction of approximately 2 to 5 mm at
3 the inlet and a length in the flow direction of approximately 10 to 15 mm at the
4 outlet.

1 13. The catalyzer as claimed in claim 1, wherein a cross-section of each
2 channel is essentially the same.

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1 14. The catalyzer as claimed in claim 1, wherein each plane sheet has a
2 total length in the flow direction, the total length divided into an even number of
3 coated sections, each coated section of a coated length, and
4 wherein each plane sheet has a sequence of alternating coated and uncoated
5 sections, the coated and uncoated sections on the two successive plane sheets
6 defining the channel are offset from each other in the flow direction by one coated
7 length.

1 15. The catalyzer as claimed in claim 14, wherein the catalytic coating
2 is disposed as a parallel, continuous band of approximately constant width that
3 extends in the flow direction, the band arranged across a width of the plane sheet
4 alternately on a top side and a bottom side of the plane sheet and a cross section of
5 the plane sheet perpendicular to the flow direction has the band on only one side.

1 16. The catalyzer as claimed in claim 15, wherein the band of the
2 catalytic coating is associated with each of the channels.

1 17. The catalyzer as claimed in claim 14, wherein the catalytic coating
2 is a row that extends in the flow direction having a plurality of equally sized,
3 parallel, individual islet-shaped areas, the row arranged across a width of the plane
4 sheet alternately on a top side and a bottom side of the plane sheet and a cross
5 section of the plane sheet perpendicular to the flow direction has the row on only
6 one side.

1 18. The catalyzer as claimed in claim 17, wherein the row of the islet-
2 shaped catalytic coating is assigned to each of the channels.

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1 19. The catalyzer as claimed in claim 1, wherein the catalyzer has a
2 total length in the flow direction, the total length divided into an even number of
3 coated sections, each coated section of a coated length, and
4 wherein each plane sheet extends only over one of the coated sections and
5 is provided with a catalytic coating and successive plane sheets in the stack are
6 staggered relative to the coated sections.

1 20. The catalyzer as claimed in claim 19, wherein the coated section is
2 a parallel, continuous band of approximately constant width that extends in the
3 flow direction, the band arranged across the width of the plane sheet alternately on
4 a top side and a bottom side of the plane sheet and a cross section of the plane
5 sheet perpendicular to the flow direction has the band on only one side.

1 21. The catalyzer as claimed in claim 20, wherein the band is associated
2 with each of the channels.

1 22. The catalyzer as claimed in claim 19, wherein the coated section is
2 a row that extends in the flow direction having a plurality of equally sized,
3 parallel, individual islet-shaped areas, the row arranged across a width of the plane
4 sheet and alternately on a top side and a bottom side of the plane sheet and a cross
5 section of the plane sheet perpendicular to the flow direction has the row on only
6 one side.

1 23. The catalyzer as claimed in claim 22, wherein the row is associated
2 with each of the channels.

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1 24. The catalyzer as claimed in claim 1, wherein the coated section is
2 provided over a total length of each plane sheet, the coated section having a
3 plurality of rows, each row extending in the flow direction and having a plurality
4 of equally sized, parallel, individual islet-shaped areas, and

5 wherein the areas are arranged both within each row and transversely to
6 each row alternately on the top side and bottom side of the plane sheet and a cross
7 section of the plane sheet perpendicular to the flow direction has the coating on
8 only one side.

1 25. The catalyzer as claimed in claim 24, wherein at least one row is
2 associated with each of the channels.

1 26. The catalyzer of claim 1, wherein each of the coated sections of
2 each corrugated sheet is disposed within a groove of the corrugated sheet.

1 27. The catalyzer of claim 26, wherein each of the successive
2 corrugated sheets in the stack are staggered relative to the coated sections.

1 28. The catalyzer as claimed in claim 26, wherein the coated section is
2 a parallel, continuous band of approximately constant width that extends in the
3 flow direction, the band arranged within the groove of the corrugated sheet
4 alternately on a top side and a bottom side of the corrugated sheet and a cross
5 section of the corrugated sheet perpendicular to the flow direction has the band on
6 only one side.

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1 29. The catalyzer as claimed in claim 26, wherein the coated section is
2 a row that extends in the flow direction having a plurality of equally sized,
3 parallel, individual islet-shaped areas, the row arranged within the groove of the
4 corrugated sheet alternately on a top side and a bottom side of the corrugated sheet
5 and a cross section of the corrugated sheet perpendicular to the flow direction has
6 the row on only one side.

1 30. The catalyzer as claimed in claim 29, wherein each row has a
2 plurality of equally sized, parallel, individual islet-shaped areas, and
3 wherein the areas are arranged both within each row and transversely to
4 each row alternately on the top side and bottom side of the corrugated sheet and a
5 cross section of the corrugated sheet perpendicular to the flow direction has the
6 coating on only one side.

1 31. The catalyzer as claimed in claim 1, wherein the catalyzer is used
2 for an exothermic reaction having a concomitant, homogeneous gas phase reaction.

1 32. The catalyzer as claimed in claim 31, wherein the catalyzer is used
2 in a gas turbine.

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